

REMARKS

Claims 1-12 are all the claims pending in the application. Applicant thanks the Examiner for indicating that claims 4-11 contain patentable subject matter and would be allowable if rewritten in independent form. Claims 1-3 presently stand rejected. Applicant adds claim 12 to further define the invention as discussed in further detail below.

Priority Claim:

The Examiner is respectfully requested to acknowledge Applicant's claim to foreign priority and to indicate receipt of the certified copy of the Priority Document filed on March 30, 2004.

IDS:

Applicant thanks the Examiner for returning the initialed Form PTO/SB/08 filed with the Information Disclosure Statement on March 30, 2004.

Drawings:

The Examiner has not indicated any objection to the drawing figures filed with the application on March 30, 2004. Therefore, Applicant respectfully requests the Examiner to indicate acceptance of the drawing figures.

Claims:

Claims 1-3 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Iesaka (6,478,864) in view of Igarashi (JP 6-171816).

The claimed invention is directed to a sheet discharging apparatus that includes a conveyor, a discharging device and a pushing device. Since the discharging device has a discharging speed that is higher than a conveying speed of the conveying device, the pushing

device pushes the conveyed sheet toward the discharging device without incurring any of the problems noted in the prior art, such as easily breakable and expensive one-way clutches, and damage to the discharged sheets.

Iesaka is directed to a stacker, and it includes an inlet port 20 and an outlet port 22. A pickup roller (drive roller) 26 is coupled with a driven roller 42 at the inlet port, and an eject roller (drive roller) 28 is coupled with a driven roller 46 at the outlet port. The speed of the eject roller 28 is higher than that of the pickup roller 26.

Iesaka fails to teach or suggest a pushing device. Instead, Iesaka utilizes a one-way clutch, which is the expensive structure eliminated with the use of the pushing device of the present invention.

JP '816 discloses a paper sheet discharge mechanism which includes a discharge roller 1, a projection belt 11 and a push-pressing roller 9. The paper 18b passes between the belt 11 and the roller 1, and the paper 18b ascends while pushing up the push-pressing roller 9. As the tail end of the sheet 18b reaches the roller 1, the sheet is forced into the stacker 17a by means of the force of the roller 1 and the press-contacting force of the push-pressing roller 9. As illustrated in the drawing figures, the push-pressing roller 9 finally rests on the sheet 18c, to keep it in a stable state in the stacker. Thus, the push-pressing roller 9 is disposed downstream of the discharge roller 1, for receiving the discharged sheet as it reaches its stacked position. The push-pressing roller 9 does not push the sheet toward the discharge roller 1. Moreover, as illustrated in drawing figure 1 of JP '816, the alleged guide member 8 does not push the sheet toward the discharge roller 1 either, since the guide member 8 / roller 9 structure is disposed laterally from the discharge roller 1.

Still further, the sheet is always touching the discharge roller 1 as it is nipped between the projection belt 11 and the discharge roller 1. Thus, the guide member 8 / roller 9 structure is never afforded the opportunity to push the sheet toward the roller 1. Rather, the roller 9 only contacts the sheet after the sheet leaves the discharge roller 1. Still further, the alleged guide member 8 does not contact the sheet; rather this structure is provided for attaching the roller 9 to the pivot point 6c. Thus, alleged guide member 8 does not push the sheet toward the roller 1 either.

In view of the foregoing, the pushing device of the present invention is distinguishable from the alleged pushing device 9 of JP '816. In particular, the pushing device of the present invention, "for allowing said discharging device to discharge said sheet by pushing said sheet toward said discharging device, when a rear edge of said sheet passes said conveyor", functions to push the sheet toward the discharging device.

As discussed in the Office Action, the discharging device in Iesaka is the eject roller 28, and the pushing device in JP '816 is the push-pressing roller 9. However, even if one were motivated to modify Iesaka to include the pushing device 9, as taught by JP '816, the pushing device 9 would merely be included in the Iesaka device for its disclosed purpose of pushing the sheet into its stacked state on the stacker after it is discharged. In other words, the pushing device would not push the sheet toward the discharging device, because the pushing device is disposed downstream of the discharging device. Thus, the combination of Iesaka and JP '816 would provide a push-pressing roller 9 downstream of the eject roller 28, for the purpose of stably securing the paper in the stack 16 of the tray 14, and would not be capable of pushing the sheet toward the discharging device.

In view of the foregoing, claim 1 is not rendered obvious by the combination of Iesaka and JP '816.

Claims 2-3 are patentable for at least the same reasons as claim 1, by virtue of their dependency therefrom.

Claims 1-3 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Daito (6,135,448)¹ in view of Igarashi (JP 6-171816).

The combination of Daito and JP '816 suffers from the same deficiencies as those noted above with respect to Iesaka and JP '816. In particular, even if one were motivated to modify Daito to include the alleged pushing device of JP '816, one would only have provided the alleged pushing device to the discharge rollers 52 in the manner disclosed in JP '816.

In other words, the alleged pushing device would not be capable of pushing the paper toward the discharge rollers, since the discharged paper is continuously pinched between the rollers 52 in Daito as well as the belt 11 and discharge roller 1 of JP '816. Thus, the alleged push pressing roller 9 is never afforded the opportunity to push the sheet toward the discharge roller 1. Moreover, the roller 9 functions to stably secure the discharged paper in the stack, and thus, one would only have been motivated to provide this structure to the downstream end of the discharge device in Daito. Still further, the alleged plate 8 merely helps pivot the roller 9, and is not capable of pushing the sheet toward the roller 1 since the sheet is always contacting the roller 1.

In view of the foregoing, claim 1 is not rendered obvious by the combination of Daito and JP '816.

¹ Cited by Applicant in Information Disclosure Statement filed March 30, 2004.

Claims 2-3 are patentable for at least the same reasons as claim 1, by virtue of their dependency therefrom.

New claim 12

Applicant adds claim 12 which clarifies that the sheet does not contact the discharging roller before it leaves the conveying roller. With this structure, the sheet is not scratched and a one-way clutch is not required, even though the discharging device has a higher speed than the conveying device. See published paragraph [0074].

Claim 12 is patentable over the cited references for at least the same reasons as claim 1. Moreover, it is noted that Iesaka specifically teaches that the “paper caught by the eject roller 28 is still engaged with the pickup roller 26, but is fed at the peripheral velocity of the eject roller 28 free of the load of the pickup roller 26, due to the operation of a one-way clutch (not shown) built into the pickup roller 26.” (See col. 8, lines 27-32.) Moreover, as discussed at cols. 8-9, Daito also teaches that one-way clutches are used to allow the conveying rollers 50 to run idle when the paper is conveyed at a higher speed downstream of the conveying rollers. This structure implies that the paper contacts the conveying and discharging rollers simultaneously.

Conclusion

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

AMENDMENT UNDER 37 C.F.R. § 1.111
U.S. Appln. No. 10/811,986

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,



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